



Beaver Valley

Pennsylvania



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RPPA 4.0 - 1

REP Post-Plume Awareness Course (RPPA)
Post-Plume (Intermediate) Phase - Exposure Interventions

Module Objectives

- *Characterize* the US Environmental Protection Agency (EPA) Protective Action Guides (PAGs) which provide guidance to Federal, State, Tribal, and local agencies when supporting emergency response planning and implementation of protective actions (e.g., relocation, reentry, and return) associated with "Exposure" interventions during the Post-Plume (Intermediate) phase of a radiological incident at an NRC-licensed commercial NPP.
- *Compose* planning elements related to actions and decisions to be made during the Post-Plume (intermediate) phase concerning the implementation of protective actions associated with interventions (e.g., relocation, reentry, and return) which address and are consistent with EPA Guidelines.



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Radiological Incident Phases

Potential Exposure Pathway	Phases			Protective Actions	
		Site Area Emergency (SAE)		Precautionary protective actions	Incident at NPP
External radiation from plume	Plume / Early (Emergency)	General Emergency (GE)	RESPONSE	<ul style="list-style-type: none"> Sheltering Evacuation Control of access 	Start of Release
Inhalation of radioactivity in the plume				<ul style="list-style-type: none"> Sheltering Stable Iodine Evacuation Control of access 	Release Under Control and environmental measurements available
Contamination of skin and clothes				<ul style="list-style-type: none"> Sheltering Evacuation Decontamination of persons & service animals 	
External radiation from ground deposition		Post-Plume / Intermediate	LATE / RECOVERY	<ul style="list-style-type: none"> Evacuation Relocation Decontamination of land and property 	
Inhalation of resuspended radioactivity				<ul style="list-style-type: none"> Relocation Decontamination of land and property 	No Additional Protective Actions Needed
Ingestion of contaminated food and water				<ul style="list-style-type: none"> Food and water controls 	
			Long-Term Recovery		



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Post-Plume (Intermediate) Phase – Exposure Interventions

“The intermediate phase is defined as the period beginning after the source and releases have been brought under control and environmental measurements are available for use as a basis for decisions on protective actions and extending until these protective actions are terminated.”



Refer to EPA PAG Manual
[2017] Chapter 4, pg. 40



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See Participant Notes

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Support the Establishment/Maintenance of Restricted Zones

- Any area designated for relocation will be designated as a restricted zone, where access controls are implemented. Access is restricted to limit the chronic exposure to low-level radiation and to provide security for the property inside the relocated areas.



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See Participant Notes

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Support the Establishment of Relocation Areas

- The **initial post-plume priority** is to determine if there is contamination in areas outside of the initial evacuation areas that require additional measures to protect the public from long-term exposure to low-level radioactive material.
- **Relocation** is defined as the removal or continued exclusion of people from contaminated areas as needed to avoid long-term from low level radiation.
- Relocation from an area is indicated when environmental samples exceed EPA protective action guidelines for 1st - year, 2nd -year and subsequent years.



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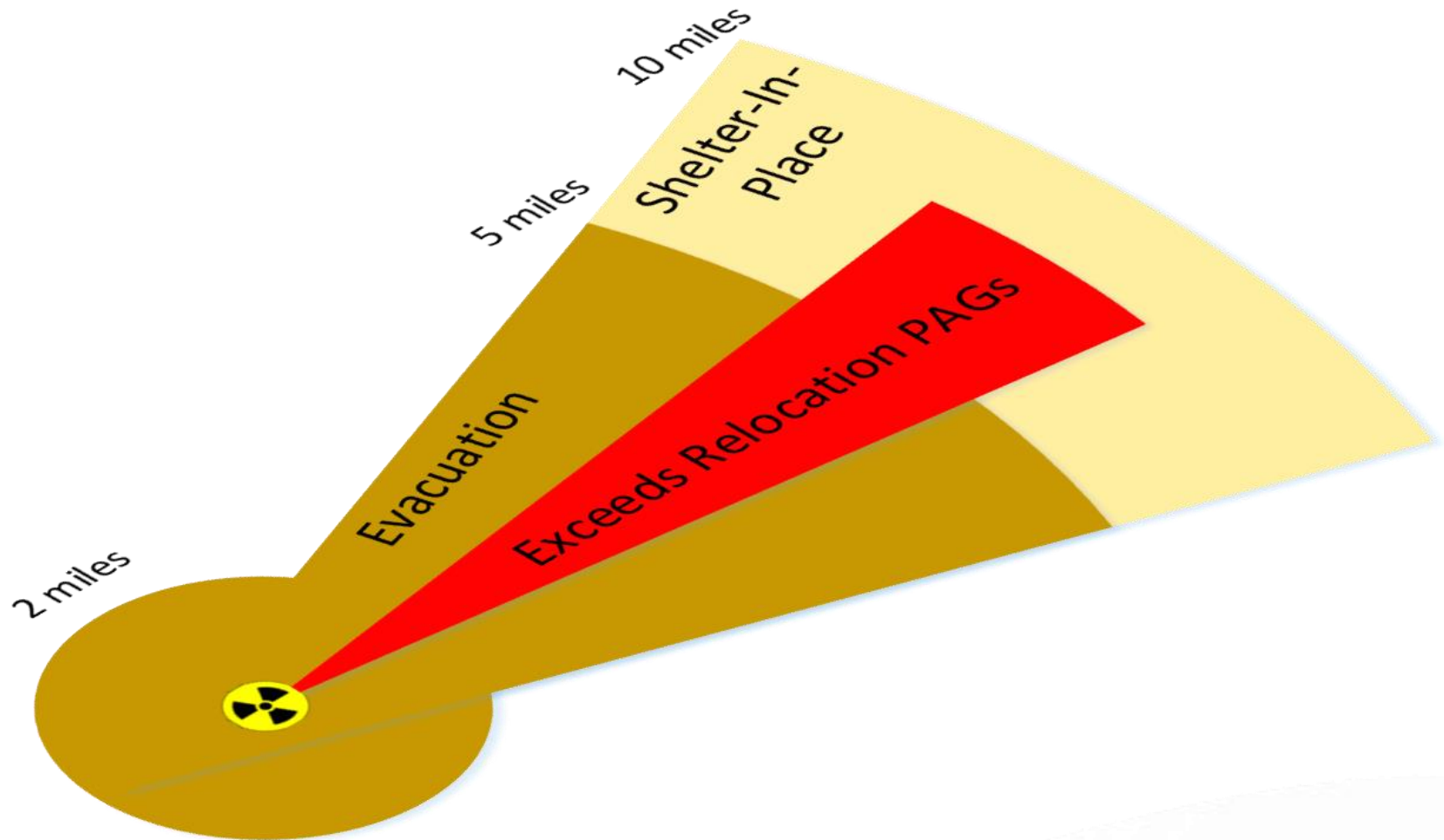
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Support the Establishment of Relocation Areas

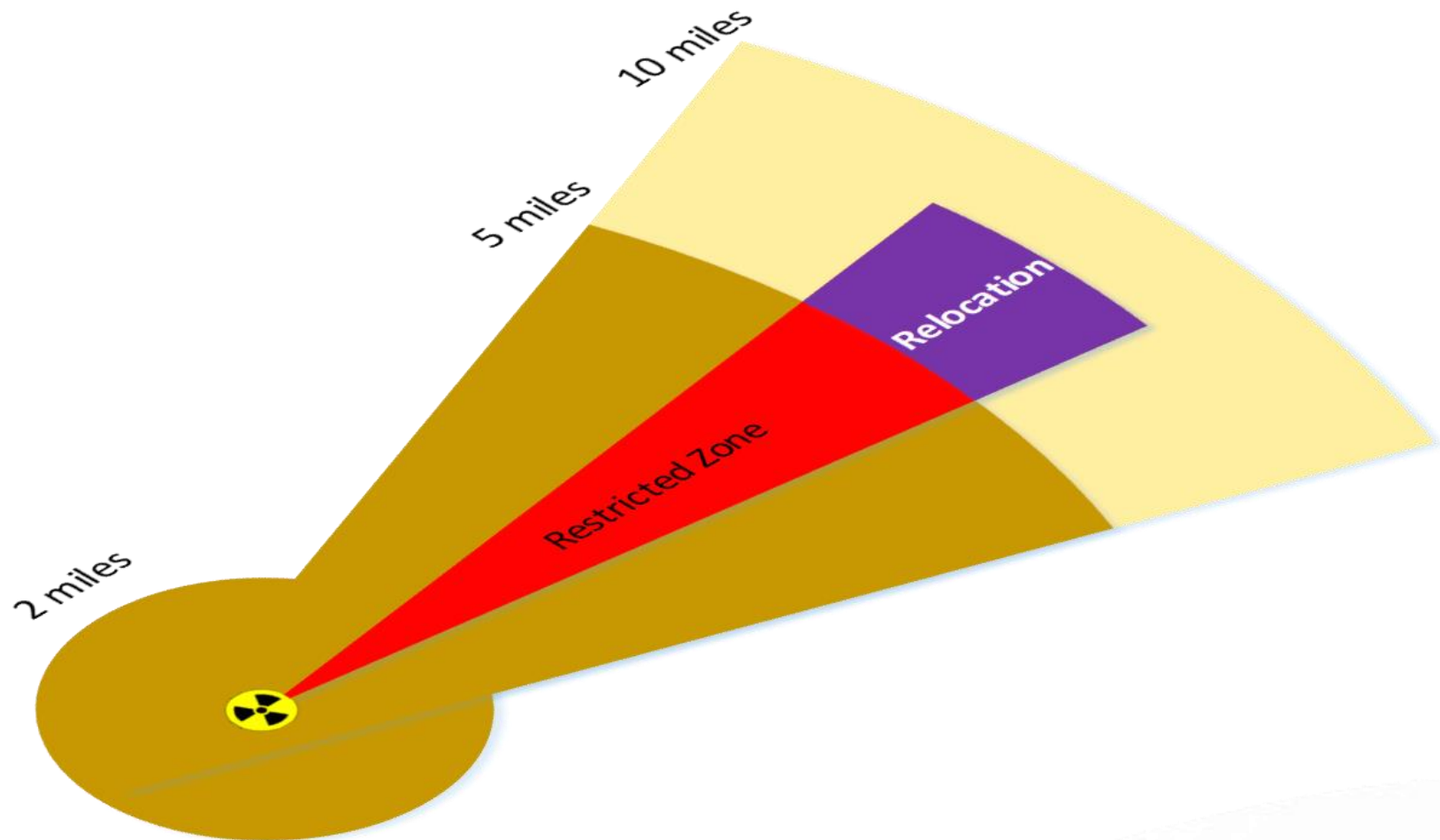


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Support the Establishment of Relocation Areas



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Post-Plume (Intermediate) Phase - Exposure Interventions

Support the Establishment of Relocation Areas outside the 10-mile EPZ

- Relocation is a movement of people from their homes and farms to a location that does not present a danger from radiological exposure.
- Relocation is allowed to take place over a period of time, normally a few days, instead of an immediate evacuation as required during the plume phase.

WHY ?

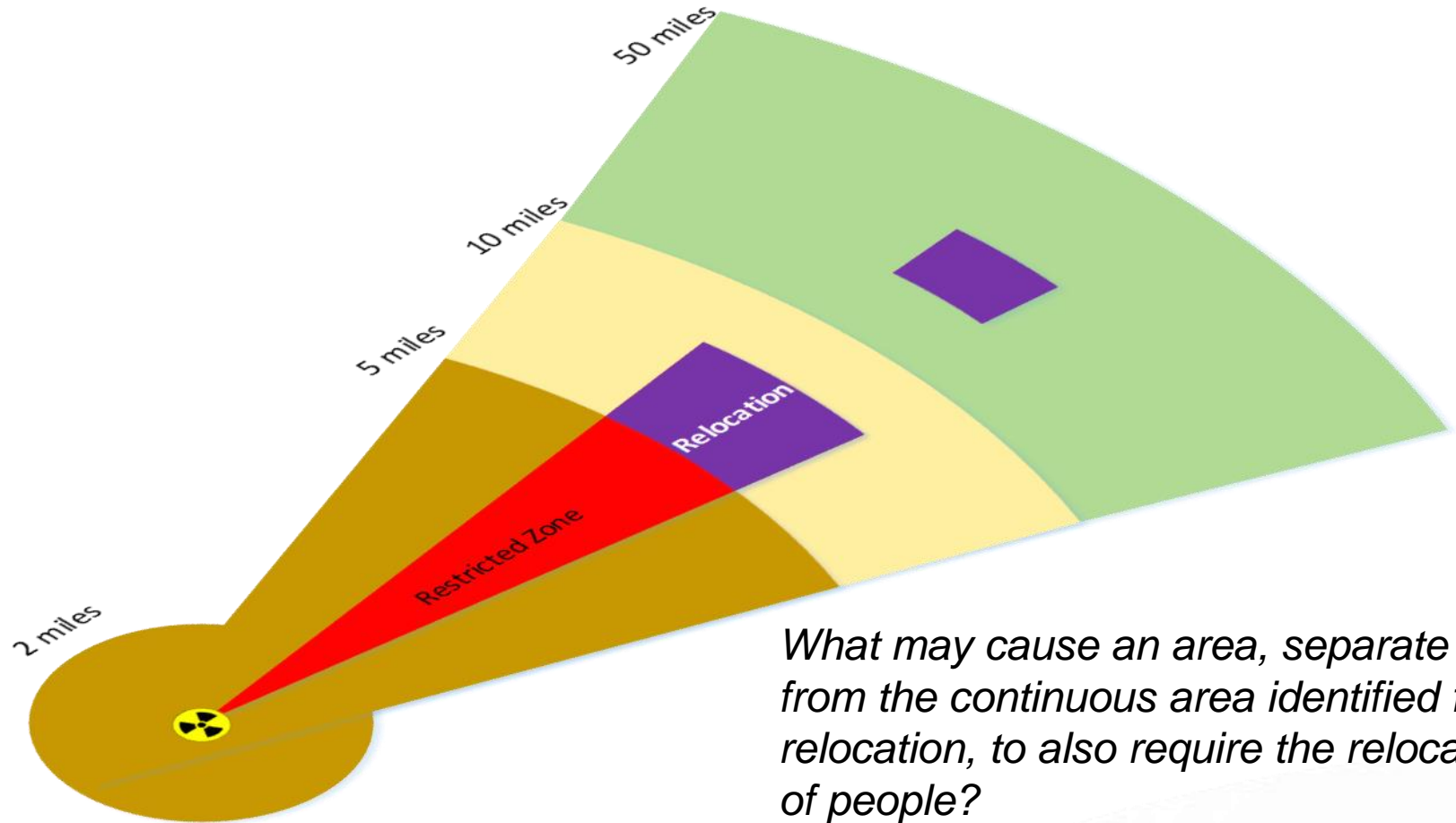


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Support the Establishment of Relocation Areas outside the 10-mile EPZ

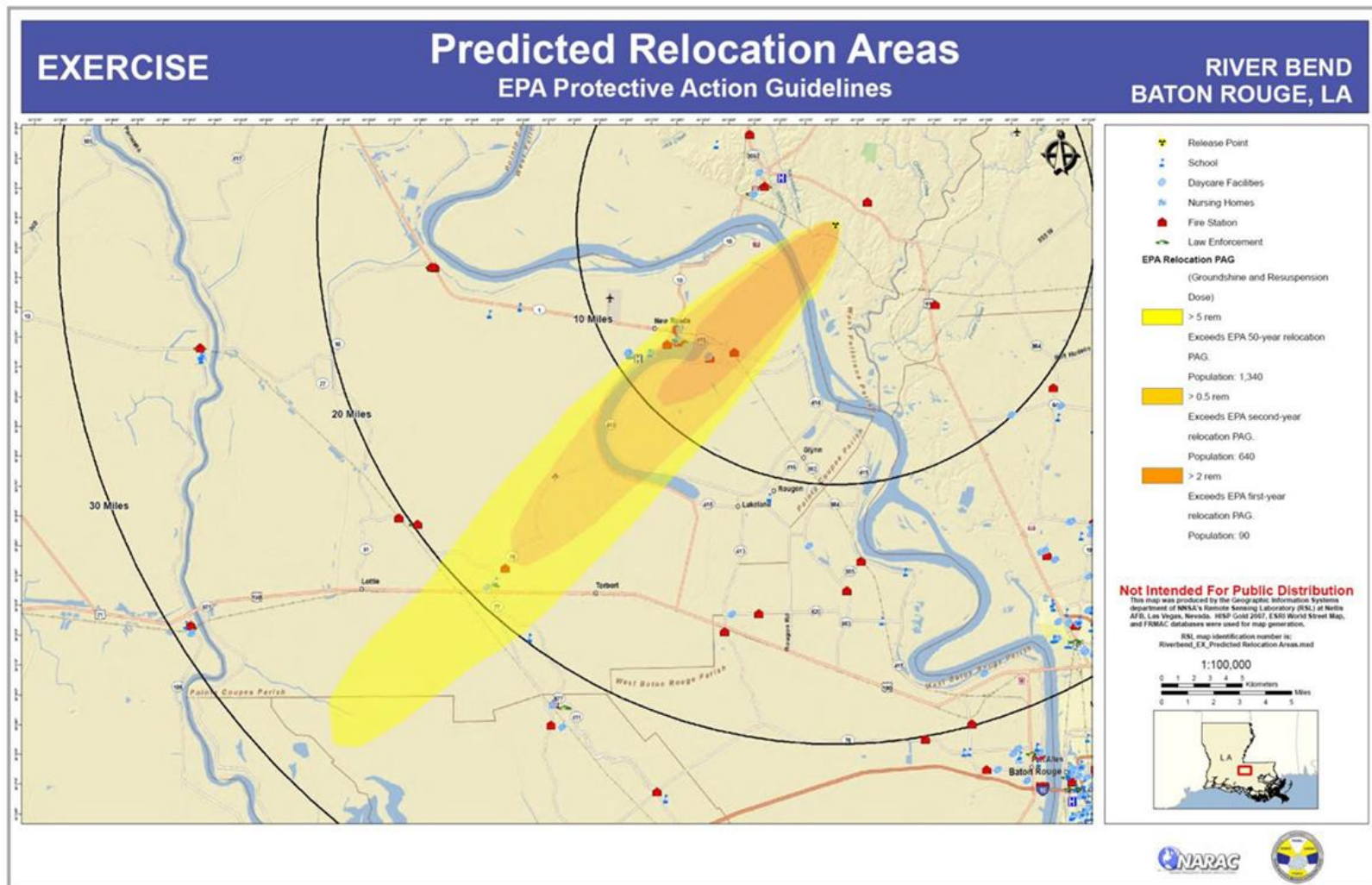


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Principal Protective Actions for the Intermediate Phase



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Support Establishment of Re-Entry into the Restricted Zone

- **Re-entry** is the approved, temporary access into a restricted zone for an essential purpose.
- Counties have the primary responsibility for coordinating and implementing a re-entry program, prioritizing and approving re-entry requests.
- Priority activities include life safety, incident stabilization, maintenance of critical infrastructure and services, and animal care.



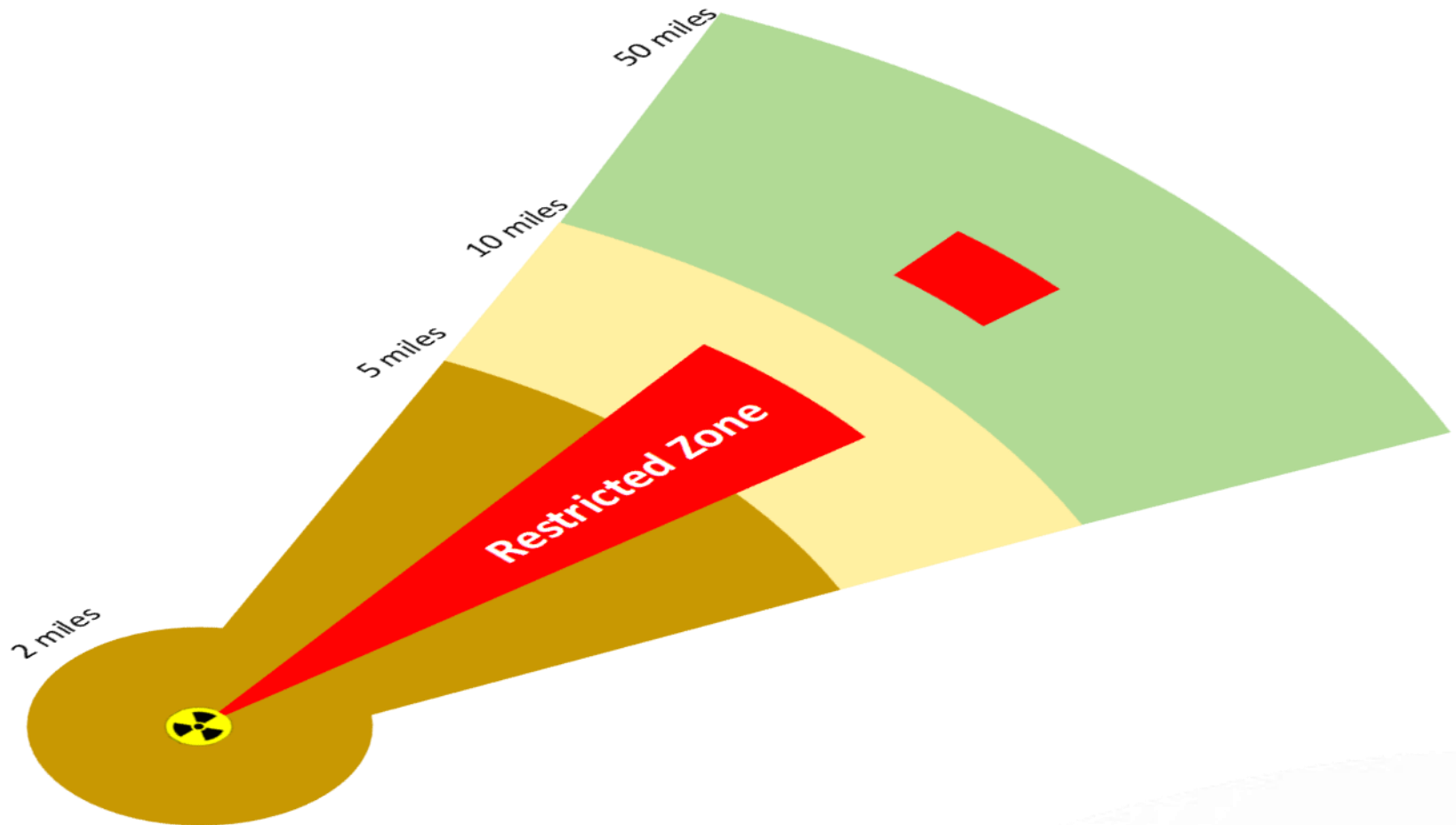
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Support Establishment of Re-Entry into the Restricted Zone

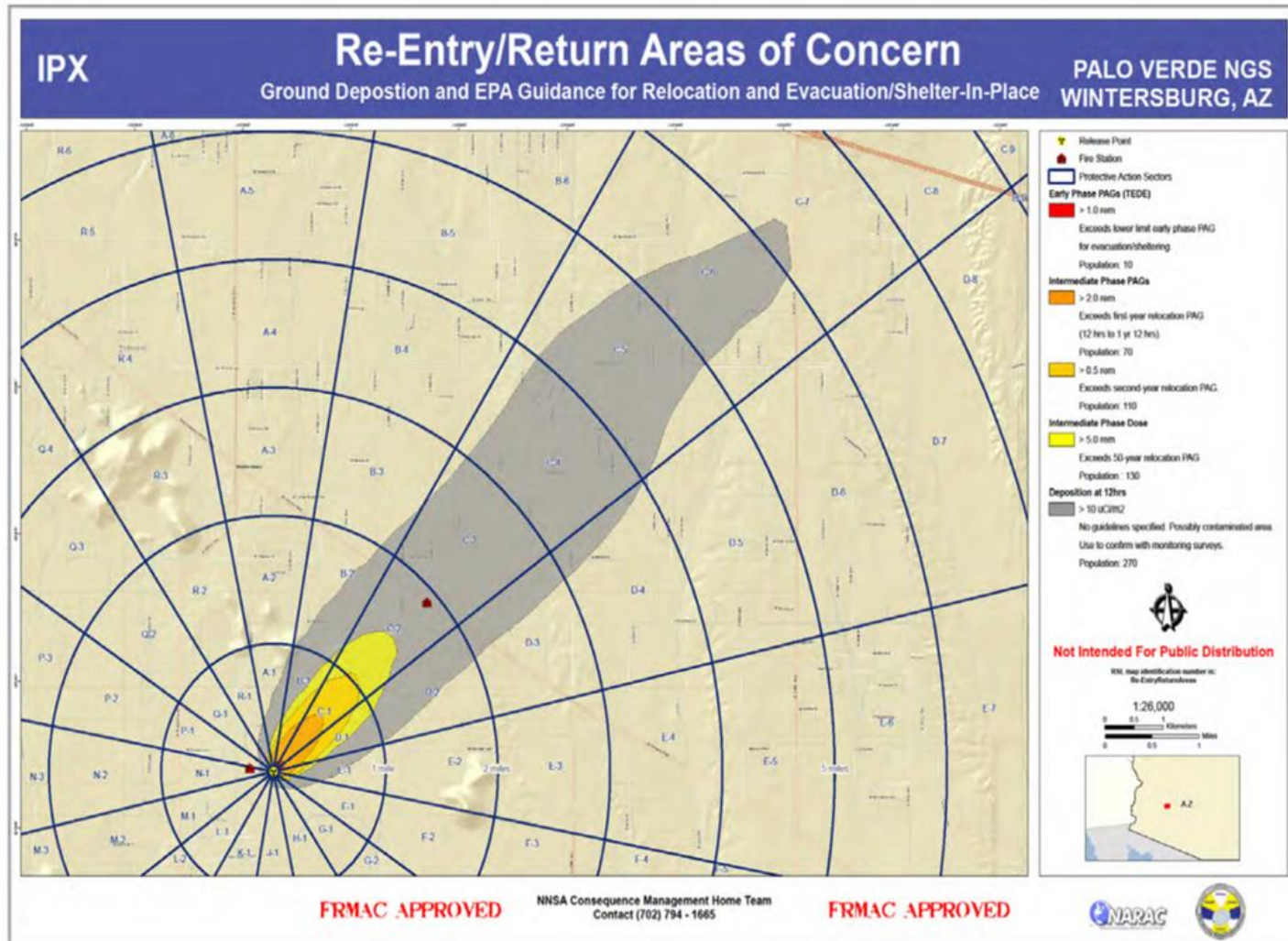


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(Sample NARAC Product)



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Support Establishment Return Areas

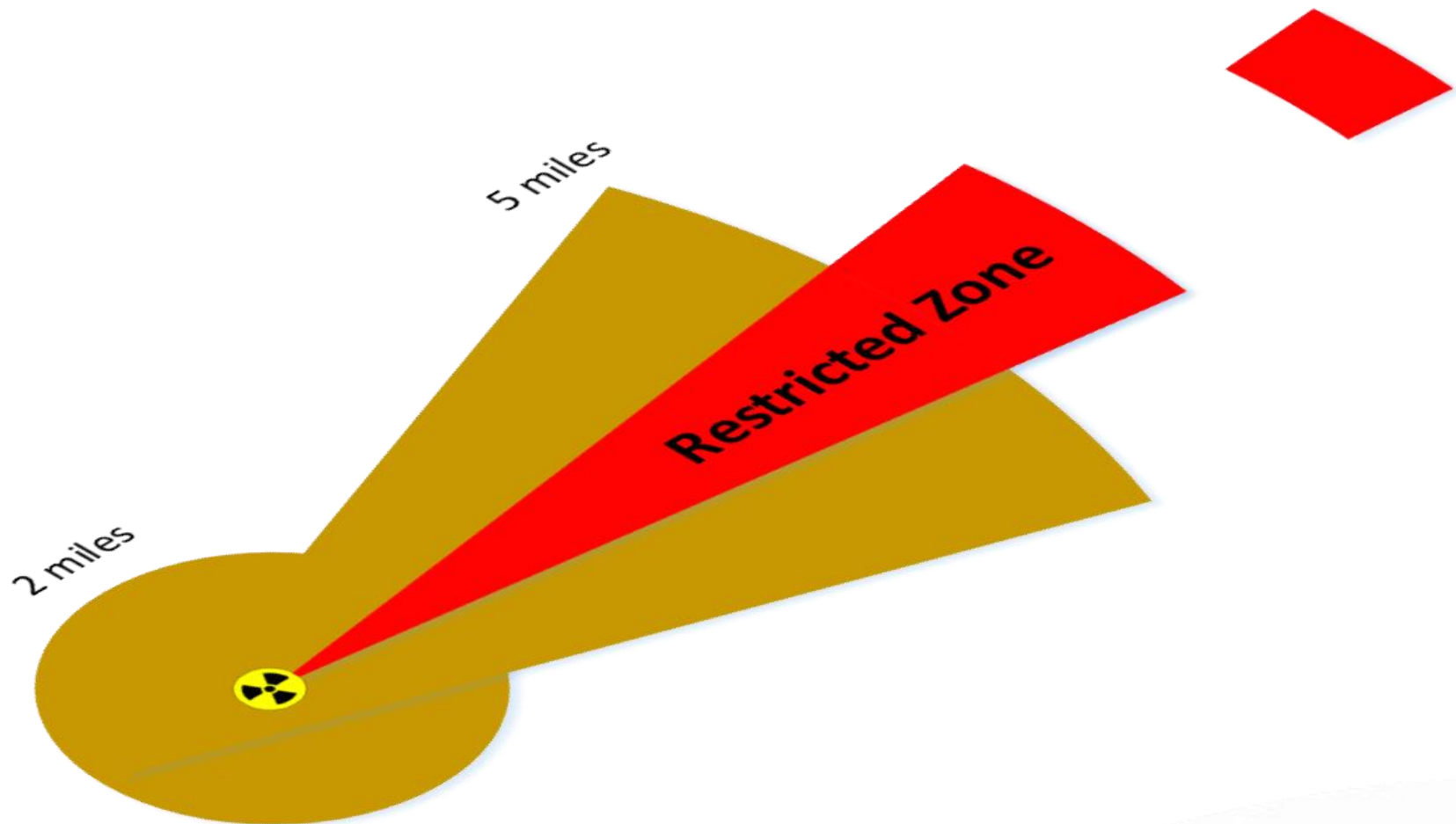
- This is the orderly return of people and reoccupation of areas cleared for **unrestricted** residence or use by previously evacuated or relocated populations.
- These areas no longer have contamination or there are no long-term exposure health risks from very low-level contamination.



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Support Establishment Return Areas



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Transition and Summary

- **Module 4.0** presented Post-Plume (Intermediate) Phase supporting Exposure Interventions.
- **Module 5.0** will provide guidance to Federal, State, Tribal, and local agencies when supporting emergency response planning and implementation of protective actions associated with “Ingestion” interventions during the Post-Plume (Intermediate) phase of a radiological incident at a NRC-licensed commercial NPP.



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